

3 composition with the total weight of the alkyl phosphate ester and the aryl phosphate ester present in a weight to weight ratio of 2.0:1 to 10.0:1 with respect to quaternary ammonium antimicrobial agent. This embodiment can include a linear quaternary ammonium antimicrobial agent. This lubricant can be employed in the process of the invention.--

In the Claims

Please cancel claims 1-30 without prejudice. Please add and consider new claims 31-108 as follows.

Sub 31. (New) An antimicrobial phosphate ester conveyor lubricant comprising alkyl alkoxyated phosphate ester, linear quaternary ammonium antimicrobial agent, and water; wherein the antimicrobial phosphate ester conveyor lubricant is substantially free of fatty acid.

32. (New) The lubricant of claim 31, wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

33. (New) The lubricant of claim 31, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

34. (New) The lubricant of claim 31, wherein the total concentration phosphate ester comprises 7-30% by weight of the lubricant and the linear quaternary ammonium antimicrobial agent comprises 1-5% by weight of the lubricant.

35. (New) The lubricant of claim 31, wherein the pH of the lubricant is less than 8.5.

36. (New) The lubricant of claim 31, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

37. (New) The lubricant of claim 31, further comprising sodium hydroxide.

38. (New) The lubricant of claim 31, further comprising a chelating agent for divalent cations.

39. (New) The lubricant of claim 38, wherein the chelating agent comprises an aminoacetic acid chelating agent.

40. (New) The lubricant of claim ~~31~~, further comprising alcohol alkoxylate.

41. (New) The lubricant of claim ~~40~~, wherein the alcohol alkoxylate comprises alcohol ethoxylate.

42. (New) The lubricant of claim 31, further comprising aryl alkoxylated phosphate ester.

43. (New) The lubricant of claim 42, wherein the aryl alkoxylated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

44. (New) The lubricant of claim 42, comprising alkyl alkoxylated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, and water; and further comprising EDTA, alkalating agent, and C₁₂₋₁₅ linear alcohol.

45. (New) An antimicrobial phosphate ester conveyor lubricant comprising alkyl alkoxylated phosphate ester, aryl alkoxylated phosphate ester, quaternary ammonium antimicrobial agent, and water;

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cont.

wherein the antimicrobial phosphate ester conveyor lubricant is substantially free of fatty acid.

46. (New) The lubricant of claim 45, wherein the quaternary ammonium antimicrobial agent comprises a linear quaternary ammonium antimicrobial agent.

47. (New) The lubricant of claim 45, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

48. (New) The lubricant of claim 45, wherein the pH of the lubricant is less than 8.5.

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49. (New) The lubricant of claim 45, wherein the lubricant is formulated to provide increased antimicrobial activity of the quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

50. (New) An antimicrobial phosphate ester conveyor lubricant comprising alkyl alkoxyated phosphate ester, linear quaternary ammonium antimicrobial agent, and water; wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

51. (New) The lubricant of claim 50, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

52. (New) The lubricant of claim 51, wherein the ratio is about 2.5:1 and the mixture retains clarity when the mixture comprises 50% lubricant and 50% beverage.

53. (New) The lubricant of claim 51, wherein the ratio is 1.5:1 and the mixture retains clarity when the mixture comprises more than 50% lubricant and less than 50% beverage.

54. (New) The lubricant of claim 51, wherein the ratio is about 16:1 and the mixture retains clarity when the mixture comprises less than 50% lubricant and more than 50% beverage.

55. (New) The lubricant of claim 50, wherein the total concentration of phosphate ester comprises 7-30% by weight of the lubricant and the linear quaternary ammonium antimicrobial agent comprises 1-5% by weight of the lubricant.

56. (New) The lubricant of claim 50, wherein the ratio is 1.5:1 to 10:1.

57. (New) The lubricant of claim 50, wherein the ratio is 2:1 to 10:1.

58. (New) The lubricant of claim 50, wherein the ratio is 2:1 to 8:1.

59. (New) The lubricant of claim 50, wherein the pH of the lubricant is less than 8.5.

60. (New) The lubricant of claim 50, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

61. (New) The lubricant of claim 50, further comprising alkali metal hydroxide or ammonium salt.

62. (New) The lubricant of claim 61, comprising sodium hydroxide.

63. (New) The lubricant of claim 50, further comprising chelating agent for divalent cations.

64. (New) The lubricant of claim 63, wherein the chelating agent comprises an aminoacetic acid chelating agent.

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65. (New) The lubricant of claim 50, further comprising alcohol alkoxylate.

66. (New) The lubricant of claim 65, wherein the alcohol alkoxylate comprises alcohol ethoxylate.

67. (New) The lubricant of claim 50, further comprising aryl alkoxylated phosphate ester.

68. (New) The lubricant of claim 67, wherein the aryl alkoxylated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

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69. (New) The lubricant of claim 67, comprising alkyl alkoxylated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, and water; and further comprising EDTA, alkalating agent, and C₁₂₋₁₅ linear alcohol.

70. (New) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising alkyl alkoxylated phosphate ester, linear quaternary ammonium antimicrobial agent, and water;

wherein the antimicrobial phosphate ester conveyor lubricant is substantially free of fatty acid.

71. (New) The process of claim 70, wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

72. (New) The process of claim 70, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

73. (New) The process of claim 70, wherein the total concentration phosphate ester comprises 7-30% by weight of the lubricant and the linear quaternary ammonium antimicrobial agent comprises 1-5% by weight of the lubricant.

74. (New) The process of claim 70, wherein the pH of the lubricant is less than 8.5.

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75. (New) The process of claim 70, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

Sub C 5 > 76. (New) The process of claim 70, further comprising sodium hydroxide.

77. (New) The process of claim 70, further comprising a chelating agent for divalent cations.

78. (New) The process of claim 77, wherein the chelating agent comprises an aminoacetic acid chelating agent.

Sub C 6 > 79. (New) The process of claim ~~70~~, further comprising alcohol alkoxylate.

80. (New) The process of claim ~~79~~ wherein the alcohol alkoxylate comprises alcohol ethoxylate.

Sub C 7 > 81. (New) The process of claim ~~70~~, further comprising aryl alkoxylated phosphate ester.

82. (New) The process of claim 81, wherein the aryl alkoxylated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

Sub C8 > 83. (New) The process of claim 81, comprising alkyl alkoxylated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, and water; and further comprising EDTA, alkalating agent, and C₁₂₋₁₅ linear alcohol.

2 84. (New) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising alkyl alkoxylated phosphate ester, aryl alkoxylated phosphate ester, quaternary ammonium antimicrobial agent, and water;

wherein the antimicrobial phosphate ester conveyor lubricant is substantially free of fatty acid.

85. (New) The process of claim 84, wherein the quaternary ammonium antimicrobial agent comprises a linear quaternary ammonium antimicrobial agent.

86. (New) The process of claim 84, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

87. (New) The process of claim 84, wherein the pH of the lubricant is less than 8.5.

88. (New) The process of claim 84, wherein the lubricant is formulated to provide increased antimicrobial activity of the quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

89. (New) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising alkyl alkoxylated phosphate ester, linear quaternary ammonium antimicrobial agent, and water;

wherein phosphate ester and the quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

90. (New) The process of claim 89, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

91. (New) The process of claim 90, wherein the ratio is about 2.5:1 and the mixture retains clarity when the mixture comprises 50% lubricant and 50% beverage.

92. (New) The process of claim 90, wherein the ratio is 1.5:1 and the mixture retains clarity when the mixture comprises more than 50% lubricant and less than 50% beverage.

93. (New) The process of claim 90, wherein the ratio is about 16:1 and the mixture retains clarity when the mixture comprises less than 50% lubricant and more than 50% beverage.

94. (New) The process of claim 89, wherein the total concentration of phosphate ester comprises 7-30% by weight of the lubricant and the linear quaternary ammonium antimicrobial agent comprises 1-5% by weight of the lubricant.

95. (New) The process of claim 89, wherein the ratio is 1.5:1 to 10:1.

96. (New) The process of claim 89, wherein the ratio is 2:1 to 10:1.

97. (New) The process of claim 89, wherein the ratio is 2:1 to 8:1.

98. (New) The process of claim 89, wherein the pH of the lubricant is less than 8.5.

99. (New) The process of claim 89, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

100. (New) The process of claim 89, further comprising alkali metal hydroxide or ammonium salt.

101. (New) The process of claim 100, comprising sodium hydroxide.

102. (New) The process of claim 89, further comprising chelating agent for divalent cations.

103. (New) The process of claim 102, wherein the chelating agent comprises an aminoacetic acid chelating agent.

104. (New) The process of claim 89, further comprising alcohol alkoxylate.

105. (New) The process of claim 104, wherein the alcohol alkoxylate comprises alcohol ethoxylate.

106. (New) The process of claim 89, further comprising aryl alkoxylated phosphate ester.

107. (New) The process of claim 106, wherein the aryl alkoxylated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.